

ABSTRACT

A laser bar is soldered to a conventional microchannel copper heat sink whose coefficient of thermal expansion (CTE) is locally modified in the area where the laser bar is soldered to better match the CTE of the laser bar. A strip of ceramic material having a CTE lower than that each of the laser bar and of the copper heat sink is soldered to portions of the metallic heat sink located adjacently to the surface area on which the laser bar is located. The inclusion of the ceramic strips enables a laser bar having a nominal CTE of $6.6 \times 10^{-6}/K$, to be soldered directly to a copper heat sink having a nominal CTE of $16.5 \times 10^{-6}/K$ without incurring thermal distortions at the interface that would limit the useful life of the laser bar.

2025-10-28 10:46:50